FARMERS' SERVICE DEPARTMENT

All inquiries on farm subjects will be given careful and prompt attention
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Address I H C SERVICE BUREAU
HARVESTER BUILDING CHICAGO

A VALUABLE FARM IMPLEMENT

The Disk Harrow Leads Other Implements in Usefulness.

George M. Logan, Indianapolis, Ind.

If properly understood and used, no better implement can be used on the farm than a good disk harrow. This information has been gained by actual experience in the field and from experience of the best farmers.

For sowing oats broadcast there is no better way than to disk the ground, then sow the oats and disk the ground again. "The better the seed bed, the better the crop," is an old adage and that is why it pays any farmer to disk his ground before sowing the oats.

All good farmers know that if they properly prepare their corn ground before planting, they not only raise a better crop, but less cultivation is required after the crop is planted. Disk the ground before plowing, is a good plan to follow with any condition of soil. Suppose the ground is corn stubble; the disk successfully cuts the stalks, leaving them on the ground as a fertilizer as well as serving the purpose of keeping the ground loose. When plowed, this loose dirt is turned under, and when disked again, a good seed bed as deep as the furrow is procured.

Suppose the ground is a heavy blue grass or timothy sod; if disked well before plowing, it will plow better, the sod will lie flat and not stand up on edge causing dry spots on which the corn will not grow or be a bother in after-cultivation. A meadow of blue grass, timothy, or alfalfa that has become "sod-bound" can be placed in proper condition better by the use of the disk harrow than by the use of any other implement.

Very often the ground is dry enough to allow the top to be worked one or two inches, but is too wet to be plowed; by disking this ground can be put in proper condition for plowing much sooner and the seed bed will also be improved. A seed bed which has been prepared, but which has since been packed down by heavy rains, can be put in better condition, with less expense and time, with the disk harrow than with any other implement.

The question of size is important. Whether it should be a four, five, six, seven, or an eight-foot harrow depends entirely upon the condition of the soil and the amount of horse power at the farmer's command. Whether the disk blades should be sixteen, eighteen, or twenty inches in diameter is another matter. Of these three, the 16-inch is the proper size, for it will disk the ground five and one-half or six inches, which is as deep as practical, and it will cut the ground better and easier and has less draught than the larger sizes. A disk is not a wheel running over the ground and carrying a load like a wagon; it is a plow, or a spade, cutting and turning the soil.

To better illustrate, draw three circles, one sixteen inches, one eighteen, and one twenty inches in diameter; then draw a straight line across each of them,—say four inches from the edge; which one of these three circles will require the most weight to put it in the ground up to the line? Which one will have the largest body of dirt to move at one revolution? Which one will stir the ground best on account of speed? Then consider that on the disk harrow there are eight, ten, twelve, fourteen or sixteen of these circles. Look at it from another standpoint. Does not the front wheel of a wagon, when loaded equally, cut deeper in the ground than the hind wheel, and does it not break or cut a rail in two that the hind wheel will almost jump over without marking?

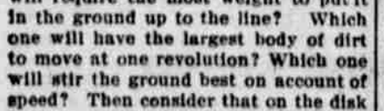
The 20-inch disk harrow is sometimes unsatisfactory and the farmer who has made the mistake of investing in a harrow not adapted to his soil gets an entirely wrong opinion of its usefulness. The owner of a good disk harrow finds it the best implement that can be used on the farm.

EVENERS.

Reply to W. Bestwick, Mervin, Sask.

"Will you send me a description of how to make a 3-horse and also a 5-horse evener?"

The illustration shows the 3-horse evener in combination with the 5-horse. The dimensions, however, from the center hole to the outside holes are given, also the length of the singletrees. You will note that the evener is seventy-five inches long, and the main hole is thirty inches from one end and forty-five inches from the other. To make a 6-horse evener the portion "A" will have to be ninety inches long from outside hole to outside hole. The main hole would then need to be in the center. This is making an evener so as to drive six horses abreast. If you are planning on using two or three horses in the lead, a different arrangement will have to be made.



A five-horse evener.

GROWING SOY BEANS

Fred E. Meyer, Bolton, Ohio, writes:—

"Please give me information how to sow soy beans. I would like to have them in rows far enought apart so I can cultivate them. Please state amount of seed per acre."

Soy beans are used very extensively for haying purposes throughout Ohio. Together with cowpeas, soy beans fill a very important place in crop rotation, and make a good hay crop, because if an early crop should fail or partially fail, it is possible to grow a crop of soy beans during the summer months. One of the chief objections to soy beans as a hay crop is that the stems become very fibrous or woody unless harvested early.

Soy beans make a very good silage crop when mixed with corn. The best results can be obtained by using two parts of corn to one of soy beans. The Ohio experiment station has found that best results are obtained when these two crops are grown separately and mixed at the time of filling the silo, putting in two loads of corn and then one load of soy beans.

For soiling purposes soy beans do very well, mainly because they come on later than oats, rye, and other crops used for this purpose. Also, because of the nature of the plant, it stands a great deal of hot weather.

Soy beans, being similar to the other leguminous crops, improve the soil by gathering nitrogen from the air. If soy beans or clovers have not been grown on the field previously, the soy beans will not, or are apt not to do so well the first year. The presence of soil bacteria is necessary to obtain the best results. This bacteria seems to be present in more desirable quantities after the beans have been grown in the same field at least one year.

There are a number of varieties that are grown very successfully in Ohio, but the medium green is the best and most widely grown. It requires from ninety to one hundred days for maturing. It is a very good crop for producing hay, but, on the other hand, must be handled with care or it will shatter its seed very badly. The Ito San is an extensively used variety. It is ten to fifteen days earlier than the medium green, but does not yield as much seed, nor is it as satisfactory for hay as medium green. There are several other varities, such as medium yellow, medium early black, and medium brown, but the two mentioned above are the best.

The soy bean requires a seed bed similar to that of corn. It will produce larger yields of forage on fertile soils, but seems to produce more seed on soils that are only medium in fertility. The application of stable manure is very profitable for growing soy beans.

In seeding soy beans, if for raising seed only, they should be drilled in rows twenty-four to thirty inches apart, which is wide enough to enable them to be cultivated. If grown for forage only, or for green manuring purposes, they are usually drilled eight inches apart by the use of the common grain drill. The Ohio experiment station has not found a wide variance in forage production between fields where the beans were drilled eight inches apart as compared with those drilled twenty-four inches apart. When drilled eight inches apart, the stalks do not grow as large, and for this reason seem to make a little better quality of hay than when drilled in wider rows.

With the rows twenty-eight to thirty inches apart, it requires about one-half bushel of seed to the acre; two foot rows require about three pecks, and if drilled solid, from one and one-half to two bushels to the acre.

The tillage implements used for cultivating soy beans are similar to those used for corn. In some cases the weeder has given very good satisfaction, but usually the one-horse harrow tooth cultivator is used. All cultivation should be shallow and level.

When harvesting for hay, the soy beans should be cut just as soon as the pods begin to form, for two reasons—first, to preserve the leaves, which is the most important part of forage purposes, and second, the stem is not so woody at this stage of the plant's growth. If the plants are left until the beans are matured, the stems are very woody and of little value for hay. If the plant is to be used for silage purposes, it may be permitted to stand until it is more mature and yet make good feed.

When cutting for seed, it is necessary to harvest before the seeds are ripe, so as to prevent losing a large portion of the seeds by shattering.

The mowing machine and the hay rake are the best implements for harvesting the soy beans. There have been some special machines designed for this purpose, but they have not proven satisfactory. When threshing for seed, the ordinary threshing machine will handle the work satisfactorily, but should be run at a very moderate speed with the concaves blank.

A little more grain, plenty of good hay, and the thorough use of the curry comb and brush is about the only whip that most farm horses need.

MONEY IN HAY STACK.

Corn Fodder a Splendid Substitute for Hay—Other Forage Crops Valuable—Hay Prices Promise to Remain Good.

[By J. E. Waggoner, of I. H. C. Service Bureau.]

Few farmers realize the importance of studying the reports sent out by the U. S. Department of Agriculture in making their plans for the future. It seems that the old habits cling to us, and we year after year sow or plant corn, oats, wheat, barley, etc., without any special concern regarding what the future price may be as based upon the supply carried over from the year before. This method of farming certainly does not show a practical application of business principles to agriculture. There are reasons, perhaps, for this indifference in planning our farm operations. Farm lands have been increasing in value very rapidly, also farm products, and it has not been necessary for the farmer to figure so closely as the business man in order to make a profit on his products, nevertheless the man who does meets with the greatest success. Very few and perhaps no other line of business could be engaged in successfully without a careful study of the conditions of that business. Just recently, the writer knew of a case where a coal dealer had planned to go into business for himself the first of March, but after he had resigned his position he began studying conditions and found that a coal strike was inevitable. A strike of this kind, to a man just starting in business, would be extremely disastrous and probably result in failure—a fate which this man avoided by studying conditions.

Every farmer should study carefully the reports, facts and figures sent out by the U. S. Department of Agriculture. We find in going over the records that the farm value of $14.64 per ton for hay in 1911 was higher than has ever occurred before in the history of the U. S. Department of Agriculture. At no other time, excepting in 1871, did the price anywhere near approach the price for 1911. At that time it was $14.20 per ton on the farm.

	Farm Value per ton	Production in tons
1908	$ 8.98	70,798,000
1909	10.62	64,938,000
1910	12.26	60,978,000
1911	14.64	47,444,000

A careful study of this table will show that the yield for 1908 exceeded by several million tons the yield of any other year for which we have a record. The price at this time was also unusually low. In 1909 the supply fell off considerably and the price advanced. The same is true in 1910, while in 1911 there was a decrease of nearly 13,000,000 tons over the year 1910, and the price increased materially. This shows that the price varies to a marked extend in accordance with the supply and demand. The excess of hay in 1908 was undoubtedly instrumental in keeping the price at a low figure during 1909.

An Economical Method of Baling Hay.

The continued reduction in the production of hay for the past four years, combined with the fact that we have just passed through an unusually long and severe winter, which to farmers needs no comment, would indicate that there is an unusual scarcity of hay throughout the agricultural districts. A late spring is not conducive to a good hay crop; hundreds of farmers have reported the total loss of their clover and, in many cases, of the alfalfa also. Many farmers have paid as high as $25 per ton for hay, and in the cities baled hay has sold as high as $40. Connecting with this the fact that due to the nature of tame hay, it is practically impossible to wilfully influence the fluctuation of production in one season, it seems almost a certainty that hay will be high next winter.

The hay crop is different from some of the other farm products; potatoes, for example. If the price of potatoes soars unusually high, it is almost a sure indication that, if conditions are favorable, the next year's market will be low, due to the fact that an unusual acreage of potatoes will be planted and the market overstocked. With the hay crop such an immediate fluctuation cannot show and still leave enough good hay on the farms for feeding. About the only remedy for this situation is that the farmer begin right now to plan for next winter. These plans should include sowing some crop for forage. The farmer has at his disposal the millets, sorghum cane, cowpeas, field peas, the cereals and corn. The most important of these is corn, which perhaps will produce a greater yield of forage per acre with the least amount of unusual labor, than any of these crops. Most farmers are not accustomed to handling some of these crops, but have for years cut at least a small amount of corn fodder and know how to handle this feed satisfactorily. By cutting corn there is also the saving of a great waste which is usually neglected on the ordinary farm. Thousands of acres of cornstalks are left standing every year which would supply forage for a large percentage of our stock, enabling the farmer to market his hay at a profit and besides utilize to a great extent all the products of his land. Under ordianry conditions, 35 per cent of the feeding value of corn is in the stalk. When this is left standing in the field it is practically all lost, especially if the weather happens to be severe.

It is the saving and utilizing of all the products of the farm that makes farming profitable. The writer was recently in one of the large factories, and was impressed with the strict principles of economy which were followed. One operation in the manufacture of a binder is the testing of the binder head. This requires the use of twine with which most farmers are familiar. The operator in this test carefully saved every inch of twine, which was transferred to another department and utilized for tying shipping sacks and for other purposes. If it is necessary for big manufacturing companies to be so economical in order to make a profit, it is more important that the farmer should adopt like principles which will enable him to reap greater benefits and more profit from his land.

Speculation is what might be termed dealing in futures, or a business transaction of a hazardous, uncertain or unusual nature with the hope of realizing unusual profits therefrom. The farmer who plans now to supply forage in the form of corn fodder, millet, etc., and prepares to place on the market a good supply of marketable hay is not indulging in speculation in the least, for government figures combined with unusual weather conditions show that there is and will continue to be for some time to come, a scarcity of hay throughout the entire country. Taking into consideration these conditions, it does not seem that the farmer can make any mistake by planning to utilize his corn in the form of fodder for rough forage, and to sell his marketable hay.

VELVET BEAN.

C. B. Waller, Athol, Ky., writes us as follows: "Can you give me some information on the velvet bean—that is, will it mature in this locality, how should it be planted, and what fertilizer will give best results?"

The velvet bean is a trailing legume, the vines growing from ten to fifty feet long. Its great value as a green manuring and forage plant has been discovered within the last two years. Experiments at the Alabama, Florida, Louisiana and Mississippi experiment stations show that for the lower half of the Gulf States, the velvet bean is equal in value to the cowpea and for some purpose is much better. North of latitude 32 degrees, the seed will seldom mature.

The experience thus far obtained with this crop would indicate that the best method of growing velvet beans is to plant them in every third row of the corn field. Skip every third row when planting the corn early in March. The corn must be planted early enough so that the beans may be planted sufficiently early to mature seed and at the same time not interfere with the cultivation of the corn.

Plant two or three beans in hills about three feet apart on the skipped rows about April 15. The vines will not interfere with the cultivation of the corn until it is time to give it the last working.

The rows on which the velvet beans are planted should be fertilized with about 100 pounds per acre of a mixture of 1,500 pounds of acid phosphate and 500 pounds of kainit.

It is seldom advisable to save the vines for hay. It is a grazing crop. The beans are often harvested and fed to stock, but it generally pays better to allow all kinds of stock to graze off the beans and vines. Turn the stock in after the first heavy frost in the fall.

The result obtained at the Alabama, Florida, Louisiana and Mississippi stations show the great value of velvet beans as a green manure. Even where the seed will not mature, no better leguminous crop can be grown to increase the humus and nitrogen in the soil.

For detailed information see Ala. Exp. Sta. Bulls. 104 and 120; Fla. Exp. Sta. 90; U. S. Dept. Farmers' Bul. 162 and the Miss. McNeill Exp. Sta. Bul.

Horse Collars Should Fit.

It is well worth while to have a perfect fitting collar for each work horse. Collars should not be changed from one horse to another unless the collar is fitted to the second horse. A good method of fitting collars is to wet them until they become soft and pliable, then put the collar on the horse.—Kansas Farmer.

A sharp sickle and plenty of first-class lubricating oil are good insurance against breakdown and trouble with the moving machine. Better use both.

GROWING RAPE.

Reply to Nathan Ringger, Grover Hill, Ohio.

"How is rape as a cattle feed for milch cows, and what time is best to sow? How are soy beans for cattle, and what is the time to sow here? Would like to know if alfalfa makes a good pasture if sowed for milch cows, as the clover is all frozen out here this spring."

Rape is best adapted to cool climates, but still does exceptionally well in a very wide range of latitude. It has been grown successfully in parts of Mississippi, and all the way north into Canada. It does best and develops the most rapidly on rich, moist, loamy soils, although it will do fairly well on light, sandy soils if they are in a good state of cultivation. Rape is a very heavy feeder, and requires a great deal of moisture. It also utilizes a considerable amout of nitrogen as well as mineral plant food elements. It requires practically the same plant feed as corn, in very nearly the same porportions, and for this reason corn does not do so well following rape as some other crops, for instance, wheat.

The soil should be prepared in much the same way as for corn; in other words, it should be in a good state of cultivation before planting the rape.

There are several ways of planting this crop, depending upon conditions. Some farmers prefer to drill it in rows and cultivate it. This method is not generally followed, but gives very good satisfaction. The usual method is to sow broadcast some time along from the first of May to the middle of July, either on land specially prepared, on land following an early crop, or in the growing corn field. The usual amount of seed required per acre varies from four to five pounds.

Under favorable conditions, rape is ready for pasture from fifty to seventy days after sowing. We have known of instances where it would afford good pasture six weeks after planting but this is unusual.

Rape has a very high feeding value, and is considered an excellent feed for fattening sheep and swine. It greatly increases the flow of milk from milch cows. Some farmers object to it because they claim it taints the milk. To overcome this objection, it is well to feed rape after milking. It is a very valuable feed for other stock. Sheep and hogs are usually better than other kinds of stock for pasturing on rape. The best way to feed cattle and horses is to use rape as a soiling crop.

In several states they have experimented with mixing rape with oats or wheat, and have succeeded very well. In Iowa a pound of rape was sowed per acre about ten days after seeding the oats. The rape interfered to some extent in harvesting the oats, but probably would not have caused any trouble if it had been sowed three weeks after the oats were planted. If the land is very poor, it probably would be best to sow the rape with the small grain.

Speaking of the use of soy beans, will say that this crop is grown very succesfully in parts of Ohio, and ranks very close to clovers and alfalfa for hay. The variety known as medium green will mature seed in from ninety to one hundred days, and is considered about the best variety for most localities. The Ito San is a quicker maturing variety than the medium green, but does not produce quite as much forage to the acre nor quite as many peas under the same conditions. Among the other varieties are the medium yellow and the medium early black, but these are not as generally grown as the ones mentioned above.

If you expect to grow soy beans for seed, the best success can be obtained by drilling in rows from twenty-eight to thirty inches apart. This will require about a half bushel of seed to the acre; when drilled twenty-four inches apart, three-quarters of a bushel of seed; and, when drilled with the ordinary grain drill, seven or eight inches apart, it will require about two bushels of seed to the acre. When drilled as close as seven or eight inches the hay produced is of a better quality, not being so coarse as when the rows are wider. From the standpoint of the production of forage, there is not a great deal of difference in the yield per acre, whether the rows are drilled eight inches apart or twenty-four.

There may be some trouble in curing soy bean hay, but if the weather conditions are favorable, there need be no loss while curing. Soy beans as a crop do very well in ordinary soils but will respond much better if the seed bed is thoroughly prepared. This plant is a shallow feeder, and thus will do better in fields that have been thoroughly cultivated than it will under ordinary conditions.

Speaking of alfalfa for pastrue, will say that alfalfa sowed this spring should not be pastured before at least a year from this summer, and preferably a year from next fall, so you cannot hope for any pasture from alfalfa this coming season. For pasture under the condition you give, the growing of rape or some of the cereals combined with rape, is probably about as good a thing as you can figure on at this time.

Deep cultivation of corn is not in any way an insurance that the yield will be good; in fact, after the first cultivation deep tillage is injurious to corn. The feeding roots as a usual thing lie very close to the surface and deep cultivation injures and tears these roots to such an extent as to decrease the yield of corn. After the first time over, shallow cultivation will give the best results.

COWPEA HAY

Reply to an Inquiry from a Kentucky Correspondent.

Through our branch office at New Albany, Indiana, we have been requested to furnish you information regarding cowpeas for hay. In complying with this request will say that we are always pleased to furnish such information whenever it is desired.

We will cover the subject in a general way, but if there is any specific phase of it about which you desire further information will be pleased to take it up on hearing from you.

Authorities agree that cowpea hay is a very vauable forage crop, ranging close to clover and alfalfa, and is considered better than timothy. Some stock raisers use their cowpea hay for feeding cattle and sheep but prefer timothy and other grasses for feeding horses, claiming that they are better for horses than a leguminous crop. In some cases this may be true, but cowpea hay, clover hay, etc., are fed quite generally to work horses and colts.

The time for seeding ranges from last of April to even as late as the middle of July, depending upon location. In the latitude of Kentucky between the first of May and the middle of June is usually considered the best time for planting cowpeas. However, even when planted later than this they give very satisfactory returns. The one thing to watch out for is to plant late enough to avoid danger from cold weather in the spring. A few cold days after the cowpeas are up may do serious damage by stunting the plants. The ground should be in first-class condition, and should be thoroughly warm before the seed is planted.

The method of planting depends somewhat on the purpose for which the peas are to be used. If grown for hay, the peas may be drilled by the use of a corn drill at the rate of four or five pecks to the acre. Some, however, prefer to put in as high as two bushels. This latter quantity will give a little finer texture of hay, but will not yield as many peas as if sown in smaller quantities.

A corn drill is often used by plugging up a number of the delivery spouts, and in this way drilling the rows about 32 inches apart. The corn planter is used in some cases, and the peas are cultivated the same as drilled corn, or the rows may be double, thereby making the distance between them just one-half as wide as between the rows of corn.

Cowpeas are often sown broadcast, and give very good results when sown in this way. It requires more seed than if the drill is used. This method is never used when the crop is grown for seed. Cowpeas are also often sown with corn the last time of cultivation. This is perhaps because of the effect the cowpeas have on the building up of the soil.

The principal difficulty in growing cowpea hay is that which comes from curing the same. In some cases the mixture of cowpeas with some other crop is easier to grow than cowpeas alone. It was found at the Alabama experimental station that Whippoorwill cowpeas combined with German Millet grow a good forage crop. There is some difference in the time of maturing of these two crops, but is not great enough to seriously affect the results. This exeprimental station recommends the growing of German Millet with the cowpeas as a means of aiding the curing of same.

In harvesting cowpeas for hay, care should be exercised to handle the crop so that the leaves will not be lost. This part of the plant is very nutritious, and the usual method, and one that has given fair satisfaction, is to cut the peas with a mower early in the morning when the season is favorable, then stir up by the use of a hay tedder as soon as the tops have become well wilted. If no tedder is available, the hay should be raked into windrows, and allowed to remain in this condition until the exposed parts are thoroughly cured, but not until the leaves will break off. It should then be shocked in small cocks, and allowed to stand in this condition for two or three days if the weather will permit.

The use of canvas covers for hay cocks during the wet weather has been found to be very satisfactory, but it is also rather expensive. Cowpea hay should not be stored unless it is thoroughly cured, because if stored before, it is apt to become mouldy and spoil.

Cowpeas should be cut for hay when the leaves begin to turn yellow. The more mature the plant, the easier and quicker will the hay be cured, and, on the other hand, if the plants are green a longer time will be necessary to cure for hay.

Under favorable conditions it has been found that the length of time required to mature peas after sowing varies to some extent, but generally the Warren New Hybrid will mature in 67 days; Warren Extra Early in 62 days; Whippoorwill in 90 days; Taylor in 90 days; Clay in 97 days. This will vary somewhat in different localities and on different kind of soil, but will form a basis on which to compute the length of season required for producing cowpea hay. The New Era, Whippoorwill and Wonderful have been found to be the best adapted to harvest with the mower, because of the erectness of the plants.

In some sections cowpea hay is cured by using a pole set in an upright position around which a number of horizontal bars are nailed. The green cowpea hay is piled up around this pole, and covered by using either a canvas cover, or some other similar material, often not covered at all. This is a rather expensive way of curing cowpea hay, but the results usually are very satisfactory.